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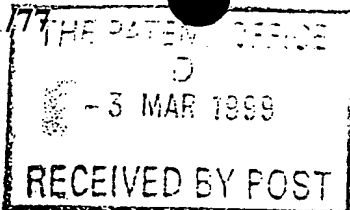
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Dated 27 March 2000

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# Request for grant of a patent

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1. Your reference

6/DW/11646.GB

2. Patent application number

(The Patent Office will fill in this part)

9904728.4

3. Full name, address and postcode of the or of each applicant (underline all surnames)

Brian Anthony Cox  
The White House  
Yarmouth Road, North Walsham  
Norfolk NR28 9AT

Patents ADP number (*if you know it*)

If the applicant is a corporate body, give the country/state of its incorporation

7102957001

4. Title of the invention

Saddles for Pedal-Operated Machines

5. Name of your agent (*if you have one*)

Sanderson &amp; Co.

"Address for service" in the United Kingdom to which all correspondence should be sent  
(including postcode)

34 East Stockwell Street  
Colchester  
Essex  
CO1 1ST

Patents ADP number (*if you know it*)

1446001

6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and (*if you know it*) the or each application number

Country

Priority application number  
(*if you know it*)

Date of filing  
(day / month / year)

7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

Number of earlier application

Date of filing  
(day / month / year)

8. Is a statement of inventorship and of right to grant of a patent required in support of this request? (Answer 'Yes' if:

No

- a) any applicant named in part 3 is not an inventor, or
- b) there is an inventor who is not named as an applicant, or
- c) any named applicant is a corporate body.

See note (d))

# Patents Form 1/77

9. Enter the number of sheets for any of the following items you are filing with this form.  
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Continuation sheets of this form

Description	7
Claim(s)	3
Abstract	
Drawing(s)	2 sheets

10. If you are also filing any of the following, state how many against each item.

Priority documents

Translations of priority documents

Statement of inventorship and right to grant of a patent (Patents Form 7/77)

Request for preliminary examination and search (Patents Form 9/77)

Request for substantive examination (Patents Form 10/77)

Any other documents (Please specify)

11.

Sanderson & Co.  
Agents for the applicant

I/We request the grant of a patent on the basis of this application.

Signature

Date 02/03/99

12.

Name and daytime telephone number of person to contact in the United Kingdom

Francis Gillam 01206 571187

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## SADDLES FOR PEDAL-OPERATED MACHINES

This invention relates to a saddle for a pedal-operated machine, and in particular - but not exclusively - to a saddle for a bicycle, tricycle exercise bicycle or the like.

5           The saddle of this invention is primarily intended for use with a bicycle, which will hereinafter be referred to simply as a "cycle". Though the invention will hereinafter be described exclusively with reference to cycles, it is to be understood that the saddle is suitable for use on a wide variety of pedal-operated machines including those mentioned above and the term "cycle" is  
10   not to be understood as limiting the invention to bicycles.

          The function of a cycle saddle is to support the greater part of the rider's weight and at the same time to restrain the rider's seat slipping off the saddle while leaving his or her legs free to rotate the pedals. A conventional cycle saddle has a rearward, relatively broad platform on which the inner part  
15   of the buttocks of a rider may rest, the platform merging into a single forwardly-projecting relatively narrow saddle horn. The primary function of the horn is to prevent the rider slipping off the saddle but in practice much of the rider's weight may be carried by the horn. Unfortunately, a rider may suffer physical problems or other medical consequences from prolonged or  
20   excessive cycling on a conventional saddle of this kind, due to the pressure exerted on the rider's crotch by the horn.

          There have been proposals for hornless saddles for cycles, which aim at minimising the likelihood of problems which may arise consequent upon extensive use of a horned saddle. There have moreover been proposals for  
25   saddles which may move, or have relatively moveable parts, aimed at making

the riding of a cycle more comfortable, or less tiring. However, all of these saddles suffer from various disadvantages including quite often a feeling of insecurity for the rider.

It is a principal aim of the present invention to provide a cycle saddle which is able to support the buttocks of a rider in a particularly comfortable and effective manner, and which does not restrict the free movement of the legs to rotate the pedals of the cycle.

According to the present invention, there is provided a saddle for a pedal-operated machine, which saddle has a seat portion having an upper surface for supporting the buttocks of a user and a mounting arrangement for the seat portion which mounting arrangement permits the seat portion to perform a rocking motion the effective axis of which is disposed above the upper surface of the seat portion.

When a rider is pedalling a cycle, his hips perform a kind of rolling action with the pelvis rocking from side to side. The saddle of the present invention allows that pelvic action to occur in a natural and unrestricted way, assisting the application of the maximum driving force to the down-going pedal of the cycle. This is because the saddle may rock to the opposite side of the cycle to the down-going pedal, so not restricting the movement of the leg on the down-going pedal. The opposite side of the saddle rises slightly so better accommodating the weight of the rider on that buttock on that side of the saddle. Then, as the pedals rotate and the other pedal starts its down-going travel, the saddle may rock to the other side of the cycle so freeing for easy movement the leg driving that other pedal.

The mounting arrangement advantageously includes a mounting means such as a bracket to permit the attachment of the saddle to a vehicle such as a bicycle or tricycle. Such a mounting means may be essentially conventional and so comprise a clamp adapted for tightening around a pillar  
5 generally-upwardly extending from a cycle frame.

The mounting arrangement further may have a track of generally arcuate form and which defines the path of movement for the seat portion of the saddle. Such a track may be in the form of an arc of a circle - that is, of a fixed radius - with the centre of the arc disposed above the upper surface of  
10 the seat and extending essentially along the plane containing the frame of the cycle. Though that axis preferably is substantially horizontal, it may extend at a small angle to the horizontal, in order to give the most effective support for a rider.

In one embodiment, the track is in the form of a rail mounted on the  
15 bracket of the mounting means, the seat portion having at least two rollers which run on the rail. Alternatively, the track could be provided on the underside of the seat portion which track runs along suitable rollers provided on the bracket of the mounting means. In either case, the arrangement of the track and rollers allows the saddle to move laterally of the cycle to which it is  
20 attached, following the arcuate path defined by the rail and centred above the upper surface of the seat portion. In a preferred arrangement, the rail has an upper surface and the rollers run along that upper surface. The rail may be of T-shaped cross-section with at least two further rollers arranged to run on the undersides of the rail, opposed to said at least two rollers, one to each  
25 side of the central web of the T-shaped rail. In this way, the seat portion may

securely be located by the mounting means so as to be free for motion along the length of the rail but restrained against movement in all other directions.

In an alternative embodiment, the track defines a channel-shaped groove and there are at least two rollers which run in the groove. Fully to  
5 locate the seat portion, there may be two channel-shaped grooves spaced apart in a direction parallel to the axis of rocking movement of the seat portion, and rollers which run in each of the grooves. For such an arrangement, it is preferred for the openings to the two grooves to face each other so as to minimise the likelihood of the ingress of foreign matter, the  
10 rollers or the like

The movement of the seat portion may be damped, for example by providing a resilient compressible material which tends to restrain the portion in its position and movement away therefrom compresses

An alternative arrangement would be to provide a resilient member between the seat portion and the bracket of the  
15

The radius of curvature of the rocking movement of the seat portion should be selected having regard to the intended use of the machine. For example, in a case of a cycle intended for use by an adult, it is anticipated  
20 that the radius of curvature may be of the order of 200mm. For other intended uses, such as a cycle by a child, a different radius might be appropriate though it is envisaged that the radius of curvature should lie in the range of about 175-250mm.

This invention extends to a cycle whenever provided with a saddle of  
25 this invention as described above.



By way of example only, one specific embodiment of saddle of this invention will be described in detail, reference being made to the accompanying drawings, in which:-

Figure 1 is an end view on the important parts of the saddle; and

5        Figures 2 and 3 are part-sections taken on lines II-II and III-III marked on Figure 1.

The saddle of this invention includes a mounting bracket 10 furnished with an adjustable clamp shown in Figures 1 and 2 and which is adapted for attachment to the upper end of a saddle pillar of a cycle. Such a clamp forms  
10 no part of this invention and is well-known in the art; it will not therefore be described in further detail here. The bracket 10 carries a transversely extending rail 11 of T-shaped cross-section, with the web 12 of the rail extending generally vertically. The rail is of arcuate form, as shown in Figure 1, though the radius of curvature has been exaggerated in that drawing and  
15 typically should be approximately 200mm. The centre of that curvature is thus positioned approximately 200mm above the centre of the mounting bracket 10.

The saddle has a seat portion which is shown only in outline in the drawings but which is appropriately configured to support the buttocks of a  
20 rider of the cycle. Typically therefore the seat portion may be a padded platform which is secured to the upper surface 13 of a carriage 14 which is supported on the rail 11 so as to be able to run from side to side along the length of the rail. The carriage 14 has three rollers 15 which run on the upper surface 16 of the rail 11 and lower rollers 17 which run along the undersides  
25 of the flange 18 of the rail 11.

The carriage 14 is generally of box-shaped cross-section but with a slot 19 in its lower face to accommodate the web 12 of the rail 11. Each roller 15 is supported on a pin extending between the side walls of the carriage and each roller 17 is supported on a cantilevered pin extending inwardly from the  
5 respective side wall of the carriage.

In use, the clamp of the mounting bracket 10 is secured to the pillar of a cycle so that the web 12 of the rail extends generally in a vertical plane, transverse to the median plane of a cycle with which the saddle is used. Thus, the axis of the centre of curvature of the rail 11 will extend substantially  
10 horizontally, in that median plane of the cycle, so that the carriage 14 may rock from side to side with the rollers 15,17 running on the rail 11. As the carriage 14 is substantially closed, and may further be provided with end caps (not shown) closely to fit around the rail, the ingress of dirt or other foreign matter is minimised, as is the entrapment of fingers (for example)  
15 should the saddle move laterally other than when the cycle is being powered by a rider.

The saddle will rock from side to side as pedalling of the cycle is undertaken. The leg driving a down-going pedal will tend to depress that side of the saddle, so causing the saddle to rock to the other side of the cycle  
20 median plane and thus better to support the other buttock. Then, as the other pedal reaches top dead centre and becomes the down-going pedal, the saddle will run across the median plane of the cycle and allow the leg driving that pedal freely to move and so impart the maximum force to that pedal. Though not shown in this embodiment, springs may be disposed between the  
25 mounting bracket 10 and the carriage 14, so as to urge the carriage generally

towards the central position shown in Figure 1, movement away from that central position being against the action of the spring force.

## CLAIMS

1. A saddle for a pedal-operated machine, which saddle has a seat portion having an upper surface for supporting the buttocks of a user and a mounting arrangement for the seat portion which mounting arrangement  
5 permits the seat portion to perform a rocking motion the effective axis of which is disposed above the upper surface of the seat portion.
2. A saddle as claimed in claim 1, wherein the mounting arrangement includes a mounting bracket to permit the mounting of the saddle on the machine.
- 10 3. A saddle as claimed in claim 2, wherein the mounting arrangement includes a track of generally of arcuate form and which defines the path of movement of the seat portion.
4. A saddle as claimed in claim 3, wherein the track is of part-circular form, centred on an axis disposed above the upper surface of the seat  
15 portion.
5. A saddle as claimed in claim 3 or claim 4, wherein the track is in the form of a rail mounted on one of the seat portion and the bracket, and the other of the seat portion and the bracket has at least two rollers which run on the rail.
- 20 6. A saddle as claimed in claim 5, wherein the rail has an upper surface and said at least two rollers run on the rail upper surface.
7. A saddle as claimed in claim 6, wherein the rail is of T-shaped section with a flange projecting laterally from a central web and there are at least two further rollers disposed one to each side of the central web of the rail and

arranged to run on the undersides of the flange, in opposition to said at least two rollers.

8. A saddle as claimed in claim 7, wherein the further rollers are displaced along the length of the rail with respect to the at least two rollers.

5 9. A saddle as claimed in any of claims 1 to 4, wherein the track defines a channel-shaped groove and there are at least two rollers which run in the groove.

10 10. A saddle as claimed in claim 9, wherein there are two channel-shaped grooves spaced apart along the axis of rocking movement of the seat portion, and there are rollers which run in each of the grooves.

11. A saddle as claimed in claim 10, wherein the openings to the two grooves face each other.

12. A saddle as claimed in any of claims 5 to 11, wherein the bracket is connected to the track and the seat portion is provided with said rollers which  
15 run on the track.

13. A saddle as claimed in any of the preceding claims, wherein the effective axis of rocking motion of the seat portion extends substantially horizontally.

14. A saddle as claimed in any of the preceding claims, wherein the radius  
20 of curvature of the rocking movement of the seat portion lies in the range of 175 to 250mm.

15. A saddle as claimed in claim 14, wherein the radius of curvature is about 200mm.

16 A saddle as claimed in claim 1 and substantially as hereinbefore  
25 described with reference to and as illustrated in the accompanying drawings.

17. A pedal-operated machine whenever provided with a saddle as claimed in any of the preceding claims.

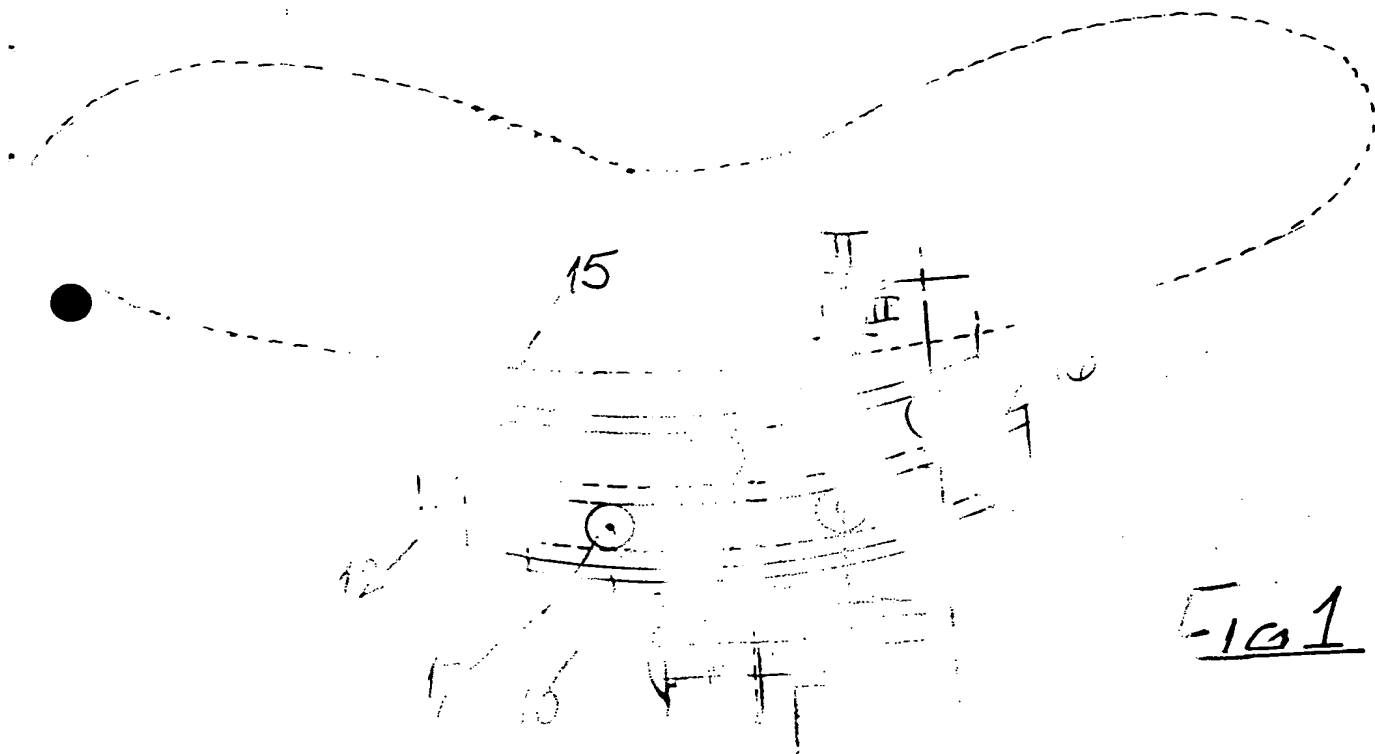
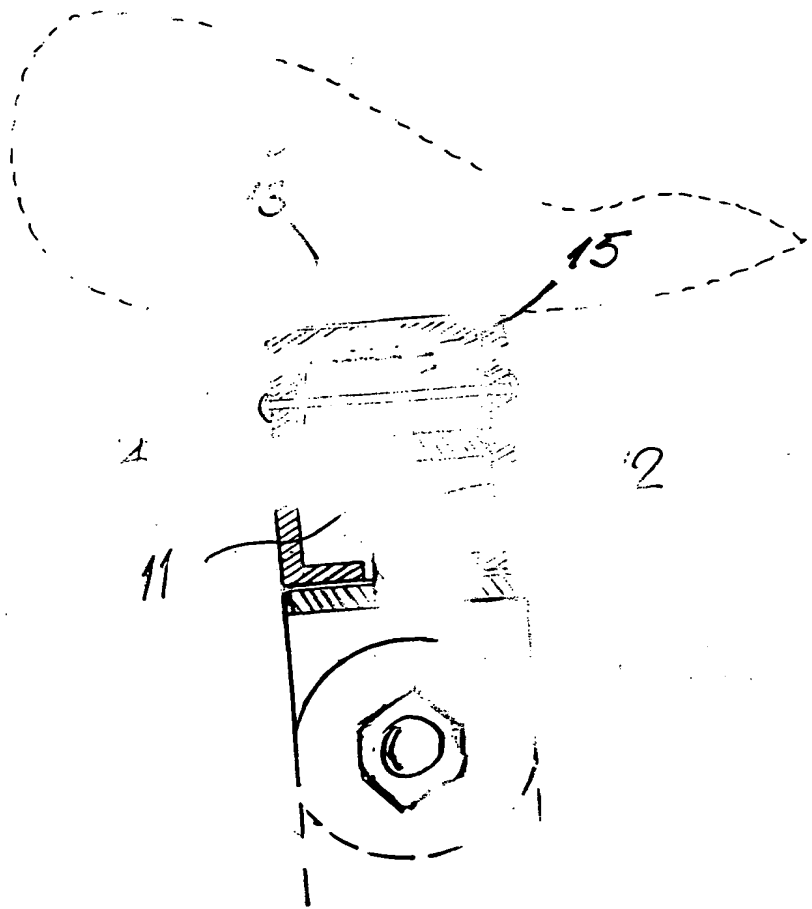


Fig 1

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F.L.

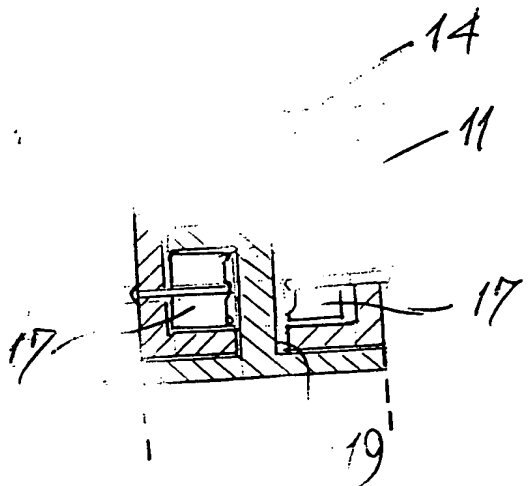


Fig 3

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